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ENHANCING ECONOMIC SECURITY AMONG SMALL-SCALE POULTRY FARMERS THROUGH ENTREPRENEURSHIP AND CONTRACT FARMING.

A STUDY FOR BF FARM

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Abstract

Economic securities of Ghanaian farmers; in context (Ghanaian poultry farmers) are gradually becoming a predominant subject of consideration with deliberate target-oriented actions in the country's entrepreneurial and agricultural societies. There have been indications of this in literature on small and large scale agricultural poultry farming studies in Ghana. The thesis investigates reviewed studies, summarizes existing literature and presents case findings on how economic well-being of both Ghanaian SMEs and poultry farmers can be enhanced through proposed extensive entrepreneurship and modern agricultural practices such as the incorporation of hazard analysis and critical control points (HACCP) in farming activities, training of farmers in appropriate farming techniques, investments (capital inputs) and good managerial decision making and bookkeeping practices which will equip farmers with relevant experiences that will influence them on incorporating the above activities to ensure economic growth . The thesis purposed to highlight the research needs and the strategies targeted towards aiding the adoption of modern poultry farming techniques by Ghanaian small-scale farmers, which will consequently contribute to the economic growth, maintenance and improvement of managerial and entrepreneurial activities between the major players through contract farming. Three sub-objectives are designed to help achieve the stated aim for the thesis. They include: finding out how contract farming enhances economic growth and stability and the importance of entrepreneurship in contract farming among small scale poultry farming, to investigate how

hazard analysis and critical control points (HACCP) can be incorporated into poultry farms to enhance economic growth, and to find the best strategic *modus operandi* in training farmers to adopting better ways in poultry farming and using the HACCP at all stages in poultry farming. The objective of the thesis is to come out with strategies that will help small-scale farmers and community (rural) farmers to adopt to modern poultry farm practices and enhance and maintain economic growth through effective managerial practices, entrepreneurship and contract farming. The study finds that contract farming adopted and examined through the case under study is purposefully favourable in attaining alternative desirable economic growth among small-scale farmers, with spiral developmental effects on both the agricultural and entrepreneurial societies in Ghana. The implication of the findings of the thesis reflects that without both concept of entrepreneurship and contract farming, the objective of obtaining economic growth cannot be realized since the lack of supply for poultry birds indicates a lower sales revenue, also in the light of high demand of live poultry birds from processing companies, inappropriate farming techniques, lack of entrepreneurial and managerial decision making skills and the lack of investment will make it difficult to enhanced economic growth.

The concept of enhancing economic growth through contract farming and entrepreneurship was initiated and developed by me and supported by Bank X towards the purpose of enhancing economic growth through contract farming and contract farming. The project in the case study and that of the thesis are the same therefore the terms thesis project and project is used interchangeably.

KEYWORDS: contract farming, economic security, entrepreneurship, small scale poultry farmers, poultry farming, poultry (used in context to refer chicken), investment (capital input and money)

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1. INTRODUCTION

1.1 Background for the thesis

Ghana has experienced stable economic growth over the past 30 years, hence one of the fastest growing countries in Sub-Saharan Africa. Prior to recent developments, agricultural activities have been a major economic driver of the Ghanaian economy. However, recent advancements have diverted various economic interests to other aspects such as crude-oil explorations and minerals mining. These have adversely relegated agricultural sector developments to the background in Ghana.

Despite the decline, there have been recent efforts to revive the Ghanaian agricultural sector, especially poultry farming and related agricultural activities. Poultry sector development have been evident in playing important role in the growth and national development of different agro economies. Recent research has evidently shown that the poultry sector plays an important role in path to economic growth and contributes significantly to domestic food security and economic security among poultry farmers. In Ghana, the Greater Accra, Ashanti and Brong Ahafo parts of the country have experienced more commercial poultry farming compared to other parts. The poultry farming activities in these major areas and other parts have been categorized into large-scale (over 10,000 birds), medium-scale (5,000-10,000 birds) and small-scale (50-5,000 birds) farms respectively (Lammers & Helden, 2014). The thesis focuses on the small-scale poultry farmers and how their economic well-being can be enhanced through entrepreneurship and contract farming. Current data indicates there is an average of 20 large-scale poultry farmers in Ghana, which are privately owned and managed. While an average of 80 percent poultry farmers falls within the small to medium scale sector, which produces broiler birds for their meat and layer birds for their eggs respectively.

In the light of the above, there have been an increase in the estimated per capita consumption of poultry products in Ghana, although only up to 70 percent of the total animal protein consumption comes from poultry and livestock, while the other 30 percent comes from fish farming. The production of poultry products has been on the rise in Ghana since 2002, with relative increase in the consumer price of locally produced chicken compared to imported chicken. In contrast, due to high cost of domestic poultry products which cannot compete with the imported produce to a large extent, only a small percentage of the market's local demand for poultry

products has been met by small and medium scale farmers. There are several factors contributing to this, inclusive is the practice of limited bio-security which makes birds vulnerable to outbreaks and diseases. In addition, despite government's preventive measures and standards set for the poultry sector, the lack of investment in proper products marketing due to limited capital is another obstacle, compelling farmers to sell to customers directly who show up on their farms, as compared to large-scale farmers who have contracted arrangements with cold-stores and supermarkets in getting their products (processed meat, eggs) to the market. Other problems faced by the small-scale farmers includes high production costs, substandard and inefficient methods, high energy cost, lack of processing facilities, and little understanding of modern poultry techniques and farming.

Although there have been many interventions on the part of the government to alleviate farmers from the highlighted problems; an example of such is the Broiler Revitalization Project which was aimed to stimulate local poultry produce production (Lammers & Helden, 2014), there have not been much improvement. Also, policies such as the poultry and livestock policy designed to reduce importation, have created avenues and opportunities for developing small-scale farmers with supports from interested entrepreneurs have not also yielded much. The thesis intends to come in through the avenue for intervention created, by proposing to discuss further the problems faced by the poultry sector and how viable and preferable solutions can be suggested through entrepreneurship and contract farming. The study which is organized for a farm in Ghana, BF Farm, whose main objective is to help small-scale poultry farmers adopt modern poultry practices and entrepreneurial culture, thereby helping increase their production, development and growth respectively. The concept of contract farming will be explained in the literature review to throw more light on the relationship that BF Farm wants to establish through contract farming and entrepreneurship and how it will benefit the farmers. The company, BF Farm wants to outsource the rearing of birds to small-scale poultry farmers, while also planning on providing other services to aid the small-scale farmers to increase their yield. BF Farm is a company I have established to help small scale farmers in Ghana.

The following are the expected processes and outcomes of the study. The study will help farmers understand the concept of contract farming and its relationship in enterprise growth and entrepreneurship. It will suggest new avenues that both government and investors can invest, in order to create jobs and reduce unemployment. The study also provides adequate information for

financial institutions as to why they should invest and provide credit facilities for the poultry industry and how to help sustain the growth of the industry. Business minded individuals can borrow ideas on poultry farming ventures and the study can be a source of knowledge for poultry business and a base for further research. Chapter 2 describes the concept of contract farming, its advantages, disadvantages and benefits to both farmers and the buyers of the farmers. Chapter 3 focuses more on the theoretical and practical aspect of poultry farming. It delves more into the Hazard Analysis, Critical Control Points (HACCP) and its application on the poultry farm. Chapter 4 focuses on the managerial and financial aspect of poultry farming, while the final parts concludes the thesis.

1.2 Motivation

I became interested in the topic due to the close-down of most poultry farms in my community and the increase of imported poultry products in the country. Also my interest in the topic intensified after watching a video of how infected poultry are dressed and imported into the Ghana which on the long run affects the health of most Ghanaians.

On April 13, 2015, the Agriculture Ministry announced a ban on poultry importation from Burkina Faso where an outbreak of bird flu has been confirmed. Without proper measures from the government of Ghana to protect the local farmers, from the H5N1 avian flu, test in poultry at two farms in Ghana confirmed the presence of H5N1 avian flu leading to the destruction of at least 20,000 chickens on some farms, which has caused a financial setback for these farmers (Ghanaian Times, 2015).

As a concerned citizen and a business minded individual, there is a great opportunity to help small scale farmers, combining my knowledge in entrepreneurship and management with that of a partner who has a great knowledge in agriculture technology. To help enhance economic growth among small-scale farmers, contract farming, entrepreneurship and the introduction of HACCP on farms are selected tools that will help change the method of farming among selected poultry farmers in Ghana.

1.3 The objective of the thesis and research questions

The objective of the thesis is to come out with strategies that will help small-scale farmers and community (rural) farmers to adopt to modern poultry farm practices and enhance and maintain economic growth through effective managerial practices, entrepreneurship and contract farming.

The thesis is designed to find solutions to the following:

- How contract farming enhances economic growth and stability.
- The importance of entrepreneurship in contract farming among small scale poultry farming?
- How Hazard analysis, Critical control Points can be incorporated into poultry farms to enhance economic growth?
- How best to train farmers for change in order to adopt better ways in farming and fully using the HACCP at all stages in poultry farming.

1.4 The value of the proposed thesis

The theories and practice in the study will contribute in the following ways:-

First, the study will help farmers understand the concept of contract farming and its relationship in enterprise growth and entrepreneurship and how it will help farmers increase in production and maintaining economic growth. The study will also give farmers an insight of the difficulties in contract farming and how best to address these problems. In addition, the study will introduce Hazard Analysis and Critical Control Points, and how farmers can incorporate it on their farms.

Second, to the government and investors, the study will suggest new avenues that both government and investors can invest in, in order to create jobs and reduce unemployment and to increase profit maximization respectively. On a national level, it will help increase the standard of living of Ghanaians and decrease the level of importation of poultry product (especially meat) while encouraging the local industry to boost their production capacity and capabilities.

Third, the study will provide adequate information for financial institutions as to why they should invest and provide credit facilities for the poultry industry and how to help sustain the growth of the industry.

Finally, the study will provide business minded individuals ideas on poultry farming ventures, contribute to additional knowledge on poultry business and a base for further research.

1.5 Structure of the thesis

Chapter 2 described the concept of contract farming, its advantages, disadvantages and benefits to both farmers and the buyers of the farmers' products. Theories from the concept is used to explain the reasons for contract farming and its necessities in rural development and economic growth. It goes further to explain the importance of the major players in contract farming and their contribution to economic growth.

Chapter 3 focused on the theoretical and practical aspect of poultry farming. It delved more into the Hazard analysis, Critical control points (HACCP) and its application on the poultry farm. The application of the HACCP is used in solving different problems related to the process in farming, wastage and disease control on the farm.

Chapter 4 focused on the managerial and financial aspect of poultry farming. It also suggested the managerial practices that can be adapted in order for the farmers to see improvements both on the farm and in their finances. These managerial practices serve as the result of the application of the HACCP which will also suggest the appropriate managerial skills for small scale farmers to adopt. This makes work easier and the financial management of the farm clearer and understandable.

2. AN OVERVIEW ON CONTRACT FARMING

2.1 Contract farming

Contract farming according to Food and Agriculture Organization of the United Nations (FAO, n.d.), is defined as an agricultural production carried out according to an agreement between a buyer and farmers which establishes conditions for the production and marketing of a farm produce. Contract farming can act as an effective tool in alleviating risks faced by farmers while marketing their produce to their consumers. The concept has taken trend recently even though it has been in existence for a long time. With globalization on one hand and an objective to reduce cost of production through the value chain, contract farming has become the option for most companies. Most processing companies now tend to use contract farming since there is a guaranteed or consistent supply and demand that helps them to maximize and utilize their processing capacity (Eaton and Shepherd, 2001).

Just as Eaton and Shepherd, (2001) outlined the five models in contract farming, different methods can be used in the poultry industry. Companies may use different methods for the rearing of birds. Companies may decide to buy hatcheries and contract individual growers to rear the birds or they may choose to buy the birds from the farmers and then later process the birds, depending on their objectives. If companies choose to employ farmers to rear the birds, they will have to incur the cost for feed, vaccines, salaries and all other cost which will be involved in the rearing of the birds. On the other hand, a company may choose to buy birds from farmers and pay for the full cost of the birds charged by the farmer rather than the former.

Contract farming has become an increasingly important aspect of agri-business as well as in the poultry sector in recent years. Contract farming in poultry farming could play an effective role in improving the economic status of small scale farmers by increasing their income aside providing nutritious food through meat and eggs. Contract farming could help alleviate poverty in most rural areas and empower poultry farmers to expand their capacity in order to effectively and consistently supply to other processing companies.

Contract farming can be in any form of food production but in Ghana, contract farming in poultry has not been undertaken yet. With the introduction of contract farming in the Ghanaian poultry farm sector, and with governmental policies to facilitate the activities, contract farming can be used as a tool to also reduce the rate of unemployment in the country. Empowering rural and small

scale farmers in all fields aside poultry farming and providing the necessary infrastructure to make their work easier, will help cut down the rate of migration to urban areas and the seeking of white collar jobs and greener pastures in these urban areas. When the system is well planned and executed accordingly, it will increase investment in the agriculture sector of Ghana thereby creating jobs, increasing the availability of food and other opportunities for the betterment of farmers and the economy of Ghana as a whole.

The paper will analyze how contract farming helps not only the parties involved i.e., the farmers and the buying company, but also other institutions which will make a major impact on contract farming when adopted in Ghana.

2.2 Advantages of contract farming

From the farmers' perspective, contractual arrangement provides them with access to production services, credit as well as knowledge of new technology and even more, pricing arrangements that can help reduce risks, uncertainties and transaction costs. Normally, the farmer agrees to provide a specific quantity of produce at an agreed price. In return, the buyer expects the goods to meet a standard of quality which he communicates to the farmer and a delivery date he expects his goods. Often times the buyer provides embedded services such as financial or non-financial services as an integral part of the business transaction of which these service charges are usually deducted from the farmers' final sales revenue (Will, 2013). Services rendered may be in the form of seeds, fertilizers, training programmes, transportation services and logistics.

In addition, farmers do not only benefit from the contractual agreement by the provisions made by the buyer in the form seeds, fertilizers, training programmes, transportation services and logistics land and many more, but also there is a ready market for farmers produce all year round depending on the kind of contract they have with the buyer and the kind of produce they grow. In a situation where farmer's produce exceeds the demand of the buyer, he can sell to other buyers and not breach the contract since he is selling off the surplus of his produce. For example, in a case where the produce is more than the quantity required by the buyer, farmers can sell their produce to other buyers which will not breach the contract but at the long run increases their returns. Aside the ready market for farmers, contract farming gives farmers the opportunity to use the contract agreement as collateral to arrange for credit facilities with commercial banks in order to fund inputs

(Eaton and Shepherd, 2001). This provides enough funds for the farmer to increase his capacity and also provides interest for banks when they give out loans.

Some advantages to the buying company is that, they do not have to operate their own plantation or farms in other for them to have their produce. Since every business tries to cut down the cost of production, buying companies find it expedient to outsource the rearing of birds to farmers who they enter into agreement with. Reason being that, the cost of running both the poultry farm and the processing facility becomes too much of a cost for the buying company and the cost incurred in rearing and processing of birds are then transferred to the final products making it more expensive for consumers to purchase. In Ghana most large and commercial poultry farm owners operate in this nature; where they raise the birds, prepare feed on a large scale and then process these birds to frozen meat, and at the end of the process, most of the cost is transferred to the consumer. Due to the nature of operation, it has contributed to the major reason why imported chicken meat has flooded the economy of Ghana due to the high cost involved in processing locally frozen meat. In reverting the problem, it will be expedient to outsource certain part of the process than to undertake all activities which will at the end become very expensive. The value chain in demand and supply can be applied her in order to reduce the cost of production thereby allowing people to be involved in the process which in the end, will help cut down the rate of unemployment in Ghana.

In addition, both farmers and buying companies bear all risks involved in the agreement. Instead of one party bearing all the risk that may arise from the contract, the risks are shared among the parties involved in the contract. For instance, in a case where there is an epidemic which causes a high rate of morbidity and a high rate of death among the birds, the farmer will have to bear all the risk of losing sales of those birds. The buying company or buyer, may have to postpone all processing activities which may cost him his revenue or he may purchase from a different farmer at a high price with no guarantee if the birds are healthy. Even though it is a loss for both parties it is an advantage to both of them because they do not have to bear all the consequences since each party has its own discomfort. To some extent, the buying company may choose to compensate the farmer; by giving the farmer some money to start over, should the loss be severe. And also since the cause for loss was not intended, it will not breach the contract.

Furthermore, the buyer has the right to expect healthy birds to be sold to him. In order to ensure the birds are of the standard of the buyer, buyers have the right to inspect the feed to make sure they have the right ingredients in them, they must also ensure that the farmer vaccinates the birds to avoid diseases and inspect the quality of water they drink and the housing unit which shelters the birds and its cleanliness. When the buyer does necessary inspections on the farm, he knows he is expecting healthy birds and the farmer will be compelled to take good care of the birds.

2.3 Disadvantages, associated risks and opportunistic behaviors in contract farming.

Contract farming can be used as a means of enhancing economic growth and productivity for both farmers and BF Farm and other buyers in general. Farmers' income may increase but their farm capacity and wealth creation may not increase because of mismanagement and misallocation of funds. The process by which contract farming enhances economic growth is through an increase demand and supply of farmers' goods, good farm practices and decision making abilities and the proper management of funds. Contract farming may not benefit parties and may not increase the economic growth of the parties, if the parties involved do not honour the terms used in drafting the contract, and the guarantee of increasing income and resources for production will be limited. In an instance where the buyer breaches the contract by not purchasing the products of the farmer, the farmer may have to find other buyers in order to sell his produce to for him to make profit so that the products may not to be rotten. This also comes with it cost since the farmer is not guaranteed to get buyers for his goods. Also if the farmer refuses to supply goods to the buyer, the buyer may have to buy elsewhere in order to have raw materials for production. The farmer may lose as a result of reducing the prices of his goods in order to sell them, and the buyer on the other hand may have to buy from a different seller without any guarantee of the goods meeting his quality standard and at a high price. In order to be on a safer side, there should be a clause in the contract which should state the penalties to be paid should either of the parties breach the contract. There could be exemptions in the clause, that, should natural occurrence and uncontrollable situation causes either parties to breach the contract, they will not have to compensate the other parties. For example, when the farmer's flock is infected with the avian flu virus and the famer cannot meet up with supply, he will not be obliged to compensate the buyer because the cause of virus could not be detected on time. Also when there is a fire outbreak at the processing plant

(abattoir) of the buyer and he could not purchase the birds from the farmer, he may not be obliged to compensate the farmer for losses incurred. With such a clause and a clause in a contract stating how much should be paid to the parties when there is a breach of contract, parties will be compelled to honour their responsibilities in the contract.

In addition, some disadvantages of contract farming may include both farmers and buyers not honoring the contract. Farmers may benefit from the support of the buyer and end up selling to different buyers' altogether or may sell lesser quantity to the buyer and the rest of the quantity to a different buyer. Situation of such nature arises as a result of third parties (second buyers) offering to pay higher prices than the actual buyer. Farmers are then enticed to accept the offer and end up either not supplying the expected quantity to the buyer or may decide to sell the birds to a different buyer at a higher price to increase their revenues which breaches the agreement they have with their contractual partners for supplying them with healthy birds. In such a case the buyer has many choices whether to terminate the contract, file a lawsuit, charge for damages or enforce the terms of the contract for example, the farmer is to supply twice of the actual quantity of birds should he breach the contract, so the buyer will be compensated. Situation of such nature arises as a result of the farmer being the only producer of a particular product or good which has high demands.

Also, buyers may not buy from the farmer, which will be a hurdle for the farmer to find buyers for his products. Farmers may be compelled to sell at a relatively lower price than the contractual price in the agreement which will be of a loss to the farmer. Just as the farmer may sell lower quantity to the buyer in the above, the buyer may also choose to buy a quantity lesser than the one in the contract. In such situations, the farmer also chooses whether to terminate the contract, file a lawsuit, charge for damages or enforce the terms of the contract for example, when the buyer breaches the contract by not buying the agreed quantity of goods from the farmer, he is bound by the contract to pay the full price of the goods to the farmer, so the farmer will be compensated for his losses. These situations arises as a result of lot of farmers selling the same goods as the contractual farmer but prices are a bit cheaper than the contractual farmer's goods. Buyers breach contracts in order to decrease the cost of production to increase their revenues.

Even though buyers may honour the contract by buying from their contractual farmers, the quality that buyers expects can be substandard thereby affecting the value of the total product of the buyers' finished products. In a situation where the buyer does not take a keen interest in inspecting

the activities of the farmer, the farmer can sell unhealthy birds to the buyer if he does not have an idea of how a healthy bird looks like. Also when the feed is not nutritious and is full of genetically modified organism, it may boost the weight of the birds and will make them look healthy but will have an effect on the health of the consumers and in the long run, may affect the sales margin of the processing company which will ruin its reputation too. Situations of this manner arises as a result of the greediness of some farmers and their yearnings to make quick money.

In addition, when farmers tends to be weaker in decision making, they may lose their decision making power to the buyer due to the fact that, the buyer may be a monopolistic company, a large organization or when there a lot of other poultry farmers the buyers can buy from, and also little or no knowledge about how contract farming works. Buyers will tend to make agreements with small scale farmers which will benefit buyers at the detriment of the farmer. The farmer may take up all the cost of rearing the birds and the buyer will buy at a relatively cheaper price due to the situation stated above, the farmer may be compelled to sell at that price since he needs the money, or due to the lack of other buyers he will agree to sell at that price or the fear of keeping the birds for a longer time which means extra cost in taking care of the birds and the concentration of other farmers may compel him to sell at that price.

In a situation whereby farmers do not have much idea of how contract farming works, the power of deciding to share responsibilities and risks will be taken away from farmers due to the lack of knowledge of the concept and the fact that the concept is to benefit both parties. Since the farmer lacks the knowledge, he may accept whatever the buyer proposes since he thinks there is a ready market for his birds and an assured profit. He may not make any proposals which will benefit him since all he cares is the market he has for his birds and the profit he may get from the venture or contract.

The act of not honouring contracts and the opportunistic behaviour of the parties especially, becomes very expensive due to the process both parties have to go through to find new parties to transact with. The theory of transaction cost explains that, both parties who have been affected by the breach of the contract may have to pay an additional cost of going to the market, searching for new partners; which may take a lot of time, information search on these potential partners and how they do business, negotiating with them and the drafting of policies and terms to govern the intended contract, enforcement and the monitoring of these policies may take time and money

(Hollensen, 2008). In cases where farmers have goods to sell and farmers have to go through this process of finding new buyers may result in the decaying of the goods (crops) or incurring additional cost in rearing the birds which becomes more expensive to do. Buyers on the order hand may postpone production and the revenue which could have been gained will become a lost to the buyer. In avoiding this cost, opportunistic behaviour must be avoided in order not to incur the additional cost.

3. AN INSIGHT INTO HAZARD ANALYSIS CRITICAL CONTROL POINT IN FARM PRODUCTION

3.1 Food safety through hazard analysis critical control points.

Consumers expect the food they buy to be safe and governments keeps providing assurances of food safety through regulations and policies, but more procedures are needed to fully address the issue of food safety more carefully starting from the farm. Farmers are increasingly becoming aware of their responsibilities on farms and are working in collaboration with majority of the food industry and governmental agencies to learn on how best to handle crops and animals in such a way that there will not be any harm on consumers' health due to the food they consume from the food industry. Without proper safety measures to adhere to, in avoiding losses to both farmers and food industries and the health of consumers being endangered, there is a need for the incorporation of HACCP on farms, and an appropriately developed HACCP plan helps to prevent or minimize the food hazards, maintains consumers' confidence (Tompkin 1994) and finally increases the finances of both farmers and food industries. The importance of the incorporation of HACCP on farms will help in regulating and monitoring activities undertaken on farms and ensuring that farmers practice safe and modern farm activities which will result in rearing of healthy birds and at the long run increases the sales and revenues of farmers due to the high demand of healthy birds.

As Surak (2002) noted, micro-organisms found in slaughtered poultry, originates from the environment of the slaughter house (live poultry, equipment, staff) and the digestive tract of the animal. These pathogens found in poultry birds or meat are capable of causing food borne diseases in human as a result of the presence of Salmonella, Listeria, Clostridium and many others in the poultry meat (Sun & Ockerman, 2005). In the light of the above, it is of high importance for the incorporation of HACCP on farm activities to avoid or minimize the exposure of birds to micro-organism. Mead (2000) attests to the above by adding up that, there has been a recent focus on improving hygiene control during slaughter, with the incorporation of HACCP systems. The incorporation of HACCP into modern farm practices and educating farmers on the subject helps farmers to raise health birds and to increase their income as a result of a minimal exposure to micro-organisms.

Live and chicken meat production when not handled properly may be exposed to physical, chemical or microbiological contamination of poultry products which will make food unsafe and later have effect on consumers' health. These contaminations are categorized into three, these are

- Physical hazards, which includes glass, metal, wood
- Chemical hazards, includes allergens, pesticides, toxins, etc.
- Biological hazards consist of pathogenic bacteria, fungi, viruses, prions (FAO, 2001),

These hazards pose extreme danger to birds when farmers do not have the prerequisite skills and technology to properly keep live birds safe from being exposed to these hazards, and when there are no procedures as to how to minimize the spread of these contaminations, consumers suffer with their health at the long run, reason for the introduction of the HACCP on-farms, in order to curtail the issues with contaminations on farms since that is where most birds get infected. The purpose of the introduction of HACCP on farms is to minimize contamination, reduce infection and ultimately help increase the revenue of the farmer.

Hazard analysis critical control point-based (HACCP) quality assurance programmes are being developed and implemented at various farm levels for different species, in various countries. These approaches will enhance food safety for consumers everywhere. HACCP was implemented due to the various diseases that affected animals and crops which were later transferred to consumers (U.S. Food and Drug Administration, 2015).

On-farm HACCP is designed to guide farmers as to how best to manage their farms and minimize the exposure of birds to possible diseases. There are seven principles that have been designed to guide farmers in the daily running of their farms, and these include;

Principle 1: Conduct a hazard analysis.

Principle 2: Determine the critical control points (CCPs).

Principle 3: Establish critical limits.

Principle 4: Establish monitoring procedures.

Principle 5: Establish corrective actions.

Principle 6: Establish verification procedures.

Principle 7: Establish record-keeping and documentation procedures (U.S. Food and Drug Administration, 2015).

3.2 Principles of HACCP

HACCP is a systematic approach to the identification, evaluation, and control of food safety hazards (U.S. Food and Drug Administration, 2015). As stated above farmers must follow these principles in order minimize the exposure of live birds to hazards and contaminations. HACCP is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product (Canadian Food Inspection Agency, 2012). For successful implementation of a HACCP plan, all levels of management must be strongly committed to the HACCP concept from the farmer to the operational staff in the food processing company.

HACCP is designed for use in all segments of the food industry from growing, harvesting, processing, manufacturing, distributing, and merchandising to preparing food for consumption (Canadian Food Inspection Agency, 2012). The first principle states that hazard analysis should be conducted. In the hazard analysis, a list of hazards are developed which are likely to cause injury or pose danger to the live bird. In developing the list, it is expedient to consider the ingredients used in the preparation of the feed, water, process of feeding, storage of feed, housing and all other process involved in rearing of poultry birds. In drafting the list more attention should be given to the safety of the birds from possible hazards which are likely to cause injury or illness.

In order to have an effective HACCP plan, the hazard analysis must be done correctly without underestimating any aspect of the process. Reason being that, there could be hazards even if the analysis is done well. In conducting the analysis, two stages are involved.

Firstly, hazards can be identified through brainstorming. In brainstorming, ingredient used in making feed, storage of feed, water system and source, vaccination, housing (heating and cooling system), ventilation, flooring and all other components that may cause birds to be unsafe are critically assessed and examined. Based on the result of the brainstorming, potential hazards are identified and are then addressed in the HACCP plan (U.S. Food and Drug Administration, 2015).

At the second stage, each potential hazard is critically analyzed based on its severity and its occurrence to harm the live birds. The severity of the hazard is then examined to know its impact on peoples' health should the affected birds be consumed. The occurrence of the hazard can be based on epidemiological data, technical literatures relating to these hazards and in most cases experiences with such hazards in previous cases. This helps to find measures which will help in controlling the hazards or completely alleviating the hazard (U.S. Food and Drug Administration, 2015).

Principle two (2) of the HACCP has to do with the determination of the critical control points (CCPs). The critical control point is a stage where hazard are controlled or the stage where measures are applied to prevent or reduce the level of birds' infection so as to avoid transfer of contamination to consumers at the long run. Some CCPs in poultry farm is the reduction of pathogens through biosecurity programmes. Animal biosecurity is the product of all actions undertaken by an entity to prevent introduction of disease agents into a specific (Thompson, 1991). For instance, in a poultry farm where terminal disinfection will take place, farmers know they have to disinfect all tools and equipment or machines used in rearing previous birds. When the disinfection process is not done well, the possible outcome is that there is a transfer of bacteria and pathogens to new birds which occupy the space (house) which makes the birds to become infected, and when not examined, the hazard will be transferred to the final consumer after the birds are processed.

Aside the terminal disinfection exercise, farmers are to consider personal hygiene before they start the disinfection exercise. With personal hygiene, farmers are to use protective clothing, hand hygiene and showering before and after the exercise so they do not contract any infection

FARM SECURITY	HOUSE AND TRANSPORT SANITIZATION, WHEEL AND FOOT DISINFECTION
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Personal hygiene	Protective clothing, hand hygiene, showering before and after terminal disinfection exercise
Water system	Sanitizing drinking water from poultry pathogens
Aerial	Steaming up the house to control airborne diseases
Litter	Depending on the system used, floor coverings should be changed to prevent infections
Rodent control	Adopting Integrated Pest Management programmes to avoid pests and rodents
Broiler house	Terminal disinfection exercise

Figure 1: An example of a poultry biosecurity. Note: Adopted from Poultry-HACCP and Farm Biosecurity, 2015. https://www.chemours.com/Disinfectants_EMEA/en_GB/ahb/poultry/haccp_and_farm.html

In the third principle, farmers have to establish critical limits in order to control hazards. Critical control limit is the maximum and minimum value to which a biological, chemical or psychical boundary must be controlled at a critical control point to avoid, eradicate or minimize to an acceptable level where the occurrence of hazards will not pose danger to the live birds (U.S. Food and Drug Administration, 2015). At this stage, safe and unsafe operating conditions are detected at a critical control point. A critical control point can have more than one control measures for an identified hazard and each control measure can also have more than one control limits. On the poultry farm, critical limit may include the temperature of the poultry house, the water activity (a_w), the moisture level and other elements that might be considered as possible avenues for causing harm to the birds (U.S. Food and Drug Administration, 2015).

Steps	Hazard	Preventive measure	Limits	Monitoring	Corrective action	Document reference
Water/ storage	Pathogens in water	Clean supply and secured storage of water	Local regulations	Water sampling	Upgrade water source and inform supplier if any	Test report

Figure 2: An example of a critical control limit form BF Farm

Figure 2 is an example of an HACCP plan for a poultry farm about the safety of water given to live birds on the farm. In an inspection undertaken, it was observed that the water given to birds on a farm may cause harm to the birds. In order to avoid any occurrence (critical limit), the farmer has to use the local regulations as a critical limit to avoid any hazard. Local regulation implies either using safety water procedures such as disinfection or sanitization in correcting any pathogenic contamination in the water or contacting water authorities in solving the problem. Also if water is supplied to the farm, the supplier can be informed to find out the cause of infection so the water can be treated or the supplier can be changed. Frequent checking of water provides much information on the safety of water served to birds to avoid

Monitoring procedures as the fourth principle is a process of observing if a critical limit applied on a CCP is effective. This stage helps in documenting possible occurrence of hazard on the farm and also to check if the severity of a hazard has been eliminated or is minimal. Aside the efficiency of a critical limit, monitoring can be done extensively to other aspect of the farm even though it might be done to check the severity and occurrence of a particular hazard. Aside identified hazards, monitoring can be done extensively to areas that are possible avenues for possible contaminations. These may include;

- Equipment used on the farms. It may include feeders, drinkers, vaccination injectors, beak trimming equipment, fly trays among others must be monitored for possible transmission of diseases.
- Hard surfaces. Walls, concrete floors, aprons, boots and other materials may serve as a medium transferring pathogens which can be monitored and disinfected accordingly.
- Porous surfaces such as wood shavings for flooring, hays and other porous materials used in poultry farming could also be closely monitored since they are possible avenues for the transfer of infections (Food and Agriculture Organization of the United Nations. 2001).

Established corrective measures serves as an alternative procedures if the critical limits for a CCP become ineffective. During monitoring, it is possible to find that, some critical limits will not help able to curtail hazards found in the CCP. When this occurs, a secondary measure is designed in the plan to correctly solve the problem. In the example of the water safety above, corrective measures are applied when the critical limit; the local regulations are not able to solve the water

issue. The alternative measure which is upgrading or changing the water system and informing the water supplier will be resorted to if the critical limit for the CCP does not solve the water problem. The corrective measure is seen as a '*Plan B*' in most cases (U.S. Food and Drug Administration, 2015).

Verification as the sixth principle has been defined as an act of reviewing, inspecting or testing in order to establish and document that a product, service or system meets regulatory or technical standards (U.S. Food and Drug Administration, 2015). With the HACCP plan, testing should be carried out to guarantee the efficiency of the plan or system to minimize or prevent any occurrence of hazards that may affect the health of the birds. The National Academy of Sciences (1985) pointed out that, the major infusion of science in a HACCP system centers in proper identification of hazards, critical control points, critical limits and instituting proper verification procedures.

The importance of the step is that, when CCP's are identified and critical limits and monitoring are undertaken, a continuous check of the HACCP plan, will help to identify if the plan is sound and safe to be used and also detect further occurrences that might be overlooked. At this point, when the critical limit and the corrective measures proves inefficient, it is advisable to start all over to find solutions to hazards that are identified in the hazard analysis. Verifications should be done by outsiders.

Lastly, establishing record keeping and documentation of the HACCP system helps to keep a record of hazard analysis and preventive measures that will be used to minimize the effect of occurrence on the farm and alternative measures (*Plan B*) in case the preventive measures do not work (Canadian Food Inspection Agency, 2012). Aside keeping record of the HACCP system, various activities like cleaning and vaccination should be recorded in order to know the safety of the birds. Keeping records helps to keep a journal of activities that are undertaken on the farm on a daily basis.

3.3 Avian flu and economic growth in Ghana

Poultry production in Ghana is mostly done on a small scale with few being done on a larger scale. Most production are done to feed the national market with a little number of farmers who are into exporting. Most productions or rearing done in Ghana are prone to diseases (especially the H5N1

avian influenza virus) without adequate measures to control or minimize the impact of the diseases. As compared to developed countries, there are less or no rules, regulations and legislations to govern the guidance and implementation of both farms and food processing units. The lack of regulations and policies in the sector has given rise to major concerns of the health of birds which has threatened both humans and other poultry that have contact with affected birds and have also used products derived from these birds.

3.3.1 Avian flu and some effects on poultry farms in Ghana

Avian influenza refers to the disease caused by infection with avian (bird) influenza (flu) Type A viruses (Center for Disease Control and Prevention, 2015). Viruses as such predominantly exist among wild water birds universally and has a high degree of infecting domestic poultry birds and other animals. Avian flu viruses do not normally infect humans; however, there have been occasions where humans have been infected with avian flu viruses. Untamed water birds can be exposed to avian influenza A enteroviruses in their intestines and respiratory tract, however, it does affect their health as compared to tamed poultry birds which can cause birds to be sick and to some extent cause death among domesticated birds.

According to the (Center for Disease Control and Prevention, 2015), avian influenza A viruses are classified into two categories, they are the low pathogenic avian influenza (LPAI) A viruses, and highly pathogenic avian influenza (HPAI) A viruses. Infection of poultry with LPAI viruses may not cause any disease but if it might cause any infection, it will only be a mild illness. Such illness may include depression and decreased activity, decreased feed consumption, decreased egg production, coughing, sneezing, wet eyes, huddling, and ruffled feathers and drop in egg production which may not be easy to detect. Infection of poultry with the HPAI viruses causes severe diseases with a high mortality rate. Both viruses spread easily and rapidly among poultry flocks due to contact made with infected birds. (Center for Disease Control and Prevention, 2015)

According to the WHO in September 2015, there are nine subtypes of H5 viruses. These are the H5N1, H5N2, H5N3, H5N4, H5N5, H5N6, H5N7, H5N8, and H5N9. Most H5 viruses identified worldwide in wild birds and poultry are low pathogenic viruses, but occasionally highly pathogenic viruses have been detected. Sporadic H5 virus can infect humans, such as the

H5N1viruses which is currently circulating among poultry in Asia, the Middle East and West Africa, often resulting in severe pneumonia with approximately 60% mortality worldwide.

In Ghana, the H5N1 avian influenza has caused much economic hardship for most affected farmers whenever there was an outbreak of the virus. Even though there have been several outbreaks with much loss bared by farmers, little has been done to control and minimize the spread of the virus. With recent breakout confirmed by the Noguchi Memorial Institute for Medical Research of the University of Ghana on the 15th May, 2015, 44,144 birds and eggs were destroyed as part of measures implemented to mitigate the spread of the virus (Joy Online, 2015). In the light of the problem, all that was done to solve the problem was to compensate affected farmers, sensitization of the public of the disease, workshop for poultry farmers and security agencies with much dependence on foreign agencies to solve the prevailing challenges.

Since most farmers farm on a smaller scale with some practicing backyard farming, birds are exposed to the virus due to the free range system practiced by most of them. Birds are left to feed themselves by roaming around to find what to eat and at the end get exposed to viruses and diseases that affect their health. Due to the exorbitant price in feeding birds, small scale and backyard farmers are compelled to practice the free range system without any control as to where the birds go and what they feed on, rendering them to become susceptible to diseases and at the end minimizing the expected revenues of the farmer due to the number of birds that have been infected with diseases. These domesticated birds then come into contact with infected water fowls such as ducks and other infected chickens and even make contact surfaces that have been exposed to the virus and then become infected with the virus. These birds then spread the virus among themselves and the whole flock becomes infected till the farmer is able to spot some differences in the health of the birds.

The Government of Ghana has not been able to find actual solutions or procedures that will help minimize the spread of the virus to controllable level where it can be managed. The less effort on the side of government shows less concern for the sector since its contribution and impact to the GDP is minimal. As a great challenge to most farmers, and less done by the government to control the situation, poultry farmers are compelled to give up on their occupation since the loss bared outweighs the investments made, Investors on the other hand redirect their capitals into other

sectors since the poultry industry does not look lucrative due to the outbreak and the fear of losing their investments, compels them to invest into other sectors.

3.3.4 Benefits of avoiding avian flu

What the Government of Ghana is missing is the potentiality that the poultry sector can contribute to the economy of Ghana. With population growth on the rise and an increase in consumer purchasing power, demand for food has increase accordingly with a high demand for poultry products (meat and egg) since they are the major source of protein in Ghana.

With the increase demand for poultry products in Ghana, the supply side of the market has not been able to meet up with demand due to low technological advancement in the country as compared to developed nations. With a high degree of technological improvements on both farms and in food processing centers and strict legislations governing animal farming in developed countries, less records of viral and bacterial infections has been recorded as compared to most developing countries which has made it more easier to practically take good care of animals and convert them into finished, semi-finished and non-finished foods. The absence of legislations and technical rules and regulations to govern the poultry or animal sector in general has resulted in major losses for especially animal farmers and the country as a whole. With farmers losing their investments and quitting their occupation which directly increase the unemployment rate in the country and government spending more in compensating farmers who have been affected with the viral outbreak.

If the sector is to be developed coupled with strict legislations and technical rules and regulations governing animal farming and food processing, both farmers involved and the country as a whole will benefit. Reason being that, the investment made by the government in technological advancements and innovation and policies drawn to govern animal farming and food processing will reduce the excess import of poultry meat which currently stands around 200,000MT (Ashitey, 2013). Also the local farmers' and chicken processing companies in the country will be empowered to take up mass production and to supply more chicken meat to the Ghanaian populace if the government subsidizes intensively in the cost of feed, vaccinations and other poultry related necessities required in taking care of poultry and its processing. In addition both government and private companies can set up processing units whereby they can buy healthy birds from various

farmers and process them to sell as frozen meat to Ghanaians and even export any excess should they implement international rules and regulations governing animal farming and processing. In undertaking such an initiative, there will be a change the economic status of small scale farmers and the country as a whole since local production has been increased and the excess demand for local meat will be met thereby reducing chicken importation to the minimal.

Other benefit that comes with the improved animal or poultry sector is employment. Many people will be employed into the sector as farm and food inspectors, consultants, advisors, program extension officers, quality assurance officers, laboratory supervisors, etc. if only a good system is developed and investment (both capital input and money) into the sector is huge since it is capital intensive. In effect, there will be a cut down in the rate of unemployment in the country since most people will be employed to undertake inspections, give advices, organize programmes and seminars for farmers on latest developments and changes in the industry.

4. ENHANCING ECONOMIC SECURITY THROUGH ENTREPRENEURSHIP

4.1 Importance of entrepreneurship

Entrepreneurship has been defined as “the capacity and willingness to develop, organize, and manage a business venture along with any of its risks in order to make a profit” (BusinessDictionary.com, 2016). According to Randolph-Seng, Mitchell, Marin & Lee (2015), the word entrepreneurship is a historical word which was defined as a means to attain economic security. The word entrepreneur according to Holselitz (1951) in the 12th century connoted to doing something. The word was further explained by Cantillon (1664/1755) to mean undertaking independent economic activities to attain greater prosperity. In recent times, the word entrepreneurship is mostly associated with risk and ambiguity (Knight, 1921), which in the beginning was identified as a feature that was attributed to an entrepreneur since changes in market demand did not guarantee any profit as explained by Cantillon (1755).

Kindleberger (1965), in his study of factors of production and economic development indicated that entrepreneurship and knowledge are the two most important factors of the five factors of production, thus land, labour, capital, entrepreneurship and knowledge. Other researchers have explained the production process from the point of view that, land, labour and capital were the most important factors of product in the olden days for economic development which transformed most Western countries while entrepreneurship and innovation are the main factors enhancing economic growth in present times (Chandler, 1977). There have been further debate about how people are moving towards entrepreneurship and personal career development since most people are finding new ways of securing jobs and finances due to unforeseen circumstances such as economic recessions which could make them unemployed since they are not guaranteed security of their jobs (Waterman, Waterman & Collard, 1994). Drucker (2001) in his publication attested to this by emphasizing on the fact that most emerging countries (mostly the BRICS) are being transformed through knowledge and entrepreneurship which has made them more competitive and industrious. In addition, Nickels, McHugh & McHugh (2008), in their study to find out the causes of difference in the level of wealth among poor and rich countries concluded that the lack of entrepreneurship and knowledge in poor countries contributed to the low level of wealth in poor countries amidst lot of other factors of production including natural resources.

From the above, entrepreneurship is also a key driver of a country's national development. Through entrepreneurship, jobs are created which helps cut down the rate of unemployment in a country, increase the level of wealth in a country and gives entrepreneurs experience to be able to manage and make decisions that will help run their businesses successfully. As a result of entrepreneurs' contributions in an economy, policy makers are compelled to promote a robust entrepreneurial culture and increase successful venture among entrepreneurs in a country (Consortium for Entrepreneurship Education, 2016). This was confirmed by Gore at the 2000 UN Conference on Trade and Development, in his address to leaders of developing countries by admonishing them to "develop new generations of entrepreneurs who can identify profitable investment opportunities, take the risk, capitalize on the opportunities and create new generation of policy makers who can ensure that the energy of the entrepreneurial drive is intensified and channeled to support national interest and social objectives." As Gore (2000), Drucker (2001) and Nickels, McHugh & McHugh (2008) all emphasized on the importance of knowledge, most developing economies must make it a priority to find out the best way by which entrepreneurship can help alleviate their economy from poverty, make new policies based on their findings and implement these policies through the drafting of measurable developmental plans which will serve as a blueprint to guide these nations in achieving their objectives. In addition, developing countries should invest more of their resources to creating knowledge which will provide new information on technology, processes, organization, new markets, etc. which can transform the way things are done in these countries. In investing resources to create knowledge, most developing countries invest through university researches which on an average have not contributed much to these economies. Most researchers in Ghana per say, are only interested in enjoying these resources provided by the government without working to create new knowledge. As a result, the government can implement a strategic initiative where the failure to provide a meaningful research conclusion will subject the researcher to return all the resources (especially money) to the government. This will help to change the lackadaisical attitude of some researchers which will motivate and compel them to be determined in generating new ideas.

In addition, the government of Ghana have done little to support entrepreneurship in the country. Most policies drafted has little or no regards for growth of entrepreneurship in the country till 2006 when the then government drafted an eight year development plan; ***THE COORDINATED PROGRAMME FOR ECONOMIC AND SOCIAL DEVELOPMENT OF GHANA 2007 – 2015*** which

included the private sector of the Ghanaian economy by an agreed partnership with the public sector and an objective to make the private sector the engine of growth in the Ghanaian economy. In the plan, the private sector was encouraged to help modernize agriculture and its processes and development into a leading industry in the country through an innovative manner. In the plan, the private sector was to be encouraged and strengthen to widen the scope of its activities for the provision of both social and technical amenities and also partake in the development of technology in the country. Ways by which the private sector will be encouraged and strengthen was not stated in the plan making the implementation of the plan difficult and vague. For agricultural development, the government showed a keen interest in the sector by focusing on agro-processing, growth of small and medium scale industries, easy acquisition of farmland, irrigation, healthy seed and many more which will contribute a lot to crop farming at the detriment of livestock farming. The only initiative that livestock farms was to benefit from was the provision of improved breeds of livestock, animal feed quality control system, improve animal husbandry practices and promotion of efficient veterinary public health system (National Development Planning Commission, 2007).

With no clear objectives and strategies as to how the private sector and entrepreneurs were to be the engine of growth in the economy of Ghana, the change of government made it difficult to implement THE COORDINATED PROGRAMME FOR ECONOMIC AND SOCIAL DEVELOPMENT OF GHANA 2007 – 2015, as every new government have its own plan for the country. As a result, it made it difficult for entrepreneurship to grow since it was not an objective for the new government at that moment. With less initiative from the government to encourage entrepreneurship, the private sector is slowly dwindling financially due to excessive tax paid to government for their operation. As compared to other emerging economies whereby there are policies and strategies as to how to encourage entrepreneurship and increase productivity in their economies that of Ghana is different. Comparing the development plan of most developing economies and that of emerging economies in the last fifteen (15) years shows a clear difference in the policies, strategies and implementation plan for enhancing entrepreneurial growth and industrial growth in these countries. While most emerging economies gave clear outlines of their goals and how they were going to achieve them, most developing economies were designing developmental plan to save their economy and creating jobs, an example is the HIPC Initiative set by the International Monetary Fund which Ghana used in supporting its economy (Quansah, 2015).

With lot of bribery and corruption in the Ghanaian economy, there are lot of misallocation of resources, where funds needed for development ends up in individual's pocket due to the poor system of organisation and accountability in the country. For a change on such acts, it only needs an individual with a clear conscience who is ready to help transform the economy to become an emerging economy and to improve the living conditions of the people of the country, also a change in the way most Ghanaians perceive development and entrepreneurship will mandate lot of the citizens to fight for themselves rather than believing that, politicians can help change the economy but end up squandering the country's money.

4.2 Economic benefits of poultry farming and entrepreneurship

In Ghana, the poultry sector contributes to the quality of nutrition and reduces poverty among small-scale poultry farmers for both food and income. Unfortunately, the sector has not seen any massive improvement or investment making it to dwindle and compelling farmers to give up on the practice. High cost of production of feed and drugs, inefficient production methods, limited knowledge of modern poultry management and lack of processing facilities are other major necessities that farmers lack in improving the poultry sector.

In the light of high demand for poultry products on the Ghanaian market, the poultry sector has been unable to meet up with supply thereby contributing only 10% to the total market demand of poultry products in the country. In as much as the government of Ghana has tried supporting the industry by removing customs duties on poultry input (feed, additives, drugs and vaccines), the sector has only seen a marginal increase of 2% as in 2014. Commercial poultry production in Ghana can be categorized into large scale (over 10,000 birds), medium scale (5000- 10,000 birds) and small- scale (50- 5000 birds) enterprises (Lammers & Helden, 2014). In the rural areas, most poultry farmers practice backyard farming which tends to be a source of income for their livelihood and an avenue for diseases to spread among flocks in the country.

With high demand for frozen chicken meat and eggs, both BF Farm and selected farmers for the project (of enhancing economic growth) have an opportunity to feed the Ghanaian populace which in the long run will positively affect the economic positions of the contractors (project organizers and farmers). When contract farming is properly undertaken with a mindset of exploiting the

market demand for local poultry products, most farmers will be motivated to learn the modern practices of poultry farming which will help them increase their yield hence increasing their profits. As a result, other farmers who are yet to join in the contract farming with either BF farms or other buyers will be attracted to join since the evidence of success among selected farmers can be seen. At the long run, the poultry sector will be affected positively where massive investments can be directed into the sector by both government and private investors since the sector has shown how profitable it could be when invested into and the profit it will generate when further attention is given to the sector. Government will then draft policies that will encourage farmers to continue rearing birds at a cheaper cost since the government will subsidize in the sector and increase taxes, impose quotas or ban the importation of frozen meat into the country since the local industry will be empowered to provide for the country. Private investors on the other hand will invest in setting up processing plants where they in turn may buy from farmers and process the birds to finished goods in order to feed the Ghanaian market. Investment in the poultry sector will alert agriculture researchers to identify other profitable markets in the agriculture sector, and share the knowledge of profitability in other sectors, which will then be disseminated among private investors, entrepreneurs or the public in general for people to make informed decisions if they will want to venture into these markets. Unemployment in the agricultural sector can be cut down when students in the field are employed to use their knowledge to help develop the sector. A lot of pressure will be taken from the government since most people (literate and illiterate) will be employed into the sector and budget for job creation can be invested into another sector of the economy.

In the light of these opportunities, most small-scale poultry farmers in Ghana lack entrepreneurial skills and managerial skills that will help them to effectively run their farms. In order to help small scale poultry farmers, BF Farm, an agribusiness company, who is into the processing of poultry birds intend to help small scale farmers through contract farming, where small scale farmers will rear birds according to the standards of BF Farm, supply these birds to the processing company at an agreed price and in return BF Farm helps to inculcate entrepreneurial skills into these farmers and guide them through the process in order to enhance their economic security (financially and occupationally) by using BF Farm as a collateral to gain access to credit facilities with Bank X, who is funding both the farmers and BF Farm. As Drucker, Nickels and Gore stated, using

entrepreneurship, knowledge and innovation will help change the economic situation and practices of these farmers.

For entrepreneurship, BF Farm intend organizing training for farmers both on the job and through seminars by using a model farm to test its activities before the selected farmers will be taught the modern practices of poultry farming and management for them to be accountable. BF Farm will train farmers to make managerial decisions regarding their operations for them to understand the importance of management on the farm. Without proper entrepreneurial education and management skills, farmers may only learn the practical aspect of properly taking good care of the birds at the detriment of being accountable of the finances of the farm. Without proper bookkeeping, activity log books, budget and cost management, farmers may have difficulty in assessing the performance and growth of their farms. These seminars and on-the-job training will aim at identifying and developing both their managerial and entrepreneurial capabilities, which in turn will help sharpen their decision making skills concerning their operations and help them come out with innovative ways that will help them further expand their operations and positively affect their performance (Chand, 2013).

In addition, when the farmers' entrepreneurial capabilities are well developed and they understand both the concept of contract farming and entrepreneurship, it will help them to also expand their business thereby causing them to move from the small-scale to medium or commercial farms. The process can still go on when farmers become well-endowed and are able to get credit facilities to operate a slaughter house which in the long run will help the local industries to also supply poultry product, which will help cut down importation in the country. In the long run, the sector's revenue will add up to the GDP of Ghanaian economy thereby increasing the nation's revenue base. At a national level, there will be employment in rural areas thereby cutting down the rate of migration to urban areas which has increased the population in these places causing overcrowding and pollution in the cities.

In order for the concept of contract farming and entrepreneurship and the system put in place to work, there should be trust between BF Farm and the farmers involved. There will be an easy communication channel and help that will be rendered to farmers in order for the farmers to learn and understand what they are being taught. BF Farm will also guide the farmers to fully understand the concept and how it will benefit them through a model farm that will help teach the farmers

how to handle farm through exhibiting the process on the farms and explaining to farmers on the spot for them to have a first-hand experience and understanding. *Figure 4.1* explains how the model farm works.

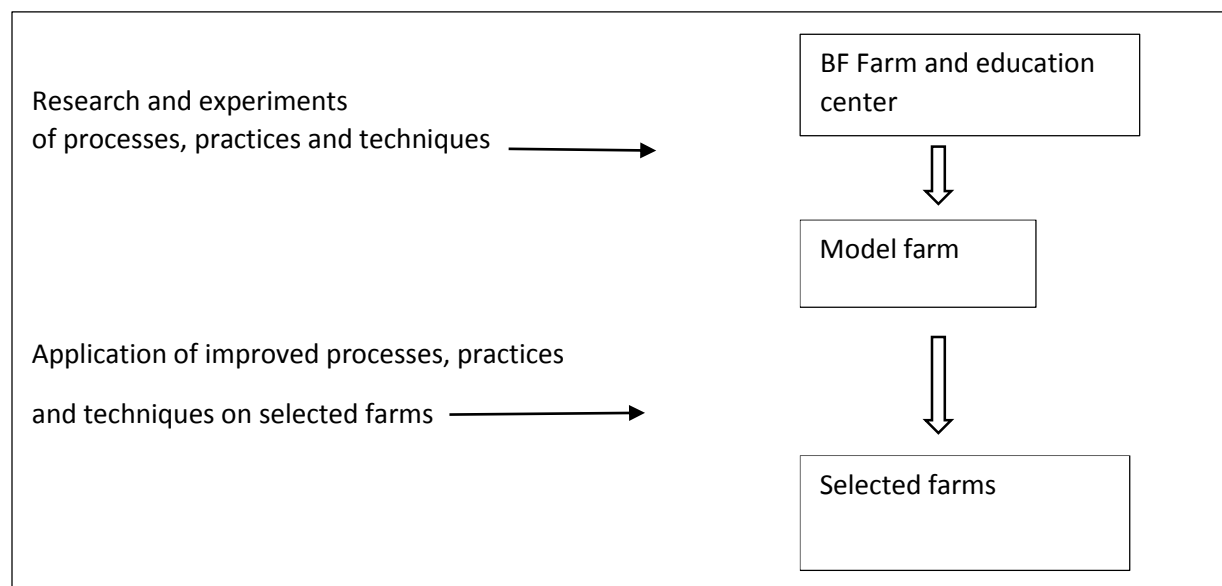


Figure 3: relevance of model farm in the poultry farming processes

In the diagram above BF Farm intends experimenting its poultry farming processes, practices and techniques on the model farm to find out if these procedures will be beneficial to the farmers. A model farm according to the Oxford English Dictionary (2009), is an experimental farm which researched and demonstrated improvements in agricultural techniques, efficiency and building layout is designed to serve as a pattern for other farms to emulate. At the model farm, the standards, practices, processes and techniques of BF Farm will be tried to see how efficient these procedures are, if in testing these standards, a part shows inefficient, it is corrected through further research and analysis, experimented and improvements made to the standard in order to make it efficient and effective. The improvements made, which yielded better results becomes the actual standards of BF Farm which will be implemented by the poultry farmers to meet up with the requirements (standards for rearing poultry and avoidance of diseases) of BF Farm in order for them to rear healthy birds which will then be processed by BF Farm.

In training them, BF Farm intends to use various methods to help farmers understand the concept of entrepreneurship and also educate them on financial issues. In order for the concept of contract farming and entrepreneurship to be successful, BF Farm intends to outsource some part of the

training especially the book keeping, cost management, budget management and records keeping on poultry farms to an educational and financial institution who will design teaching programmes on financial issues and management which will be simple to teach and easy to be understood by the poultry farmers who are willing to learn and develop their capabilities and help grow the poultry industry in Ghana.

For easy accessibility to credit from financial institutions for both parties, there is a partnership with Bank X who will also help farmers to manage their funds and to invest into their farms to enable growth. The involvement of Bank X can be seen as crucial because, without their involvement, it will be very difficult for BF Farm to undertake such an initiative since it is capital intensive. Bank X has done its own feasibility studies and has concluded that with much investment into the poultry industry, there will be an economic revolution, which will change the financial position of the country in the presence of technological advancement. In its study, the lack of knowledge, technical resources, technology and investments are the reasons for the poor performance of the sector and its poor contribution to the Ghanaian economy. From the feasibility report of Bank X, they decided to get involved in this initiative to help farmers grow in terms of providing financial assistance in all aspect of the concept of contract farming and entrepreneurship so as to make it easy to achieve the goal of enhancing economic growth among small scale farmers through contract farming and entrepreneurship. With this concept in light, it is the hope of all the parties involved that this initiative will be used as a source of knowledge to further develop the poultry industry and the agricultural sector as a whole in order to develop it and reap returns from it at the long run.

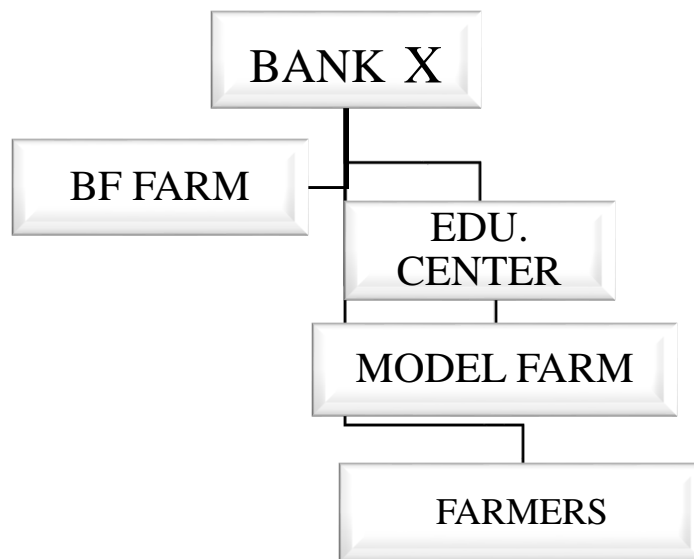


Figure 3: diagram showing the hierarchy of project organizers

Figure 4 shows the hierarchical position of the parties based on their contributions to achieve a common goal. Bank X who is the investor of the project is placed at the top of the hierarchy because without their investment and involvement, the concept enhancing economic growth through contract farming and entrepreneurship may not come into light. Aside their investment in the project, they are also providing non-financial assistance to the farmers in terms of advices on their budgets and cost management. BF Farm and the education center are positioned right below Bank X because, they are the brain behind the project and the researchers for improved and modern ways of farming. They have designed a standard poultry farming regulations which meets international standards for farmers so as to ensure safe farming practices among poultry farmers which will help them rear healthy birds. The education center is where further research activities takes place and the avenue where lessons that will be given to farmers are designed. After a programme is designed, it is then tested on the model farm to measure its feasibility and how efficient and effective the end result will be. During the trial, any fault found within the standards are corrected through further research, and improvements are made to ensure a smooth use of the standard by the farmers. Finally, farmers are to use these improved standards to guide them in their farms and to ensure that birds are safe and healthy so as to enable them to sell these healthy birds to the processing company. A flock that is not raised according to the standards of BF Farm will

not be purchased by the processing company since there is a high possibility that the health of the birds may be at risk and since BF Farm does not want to compromise on the quality of its products, farmers that do not comply with the set policies cannot sell to the processing company.

4.3 Modification and the incorporation of Harrod-Domar model in enhancing economic growth

The Harrod-Domar model states that, the rate of economic growth in an economy is dependent on the level of savings and the capital output ratio. The model implies that, the higher the rate of savings in an economy, the more the availability of funds for firms to borrow and invest. This model is a model developed by Sir Roy Harrod in 1939 and Evsey Domar in 1946. The model was designed to explain how growth has occurred in an economy and how it will occur again in the future. The high rate of savings which provides funds to be borrowed is assumed to be used to purchase or restock capital input; mostly advanced or technological input of an economy (thus investment) to generate economic growth through the increase in production of goods and services. The capital output ratio measures the amount of capital needed to produce a unit of output; that is the productivity of capital investment. When the capital output ratio is low, the economy is able to produce a lot of output out of a little capital and the high the rate of the capital output ratio, the more capital is needed to produce little output which decreases the economic growth rate of a given economy. The Harrod-Domar model defines economic growth as:

$$\text{Rate of growth} = \text{Savings} / \text{capital output ratio}$$

Even though this model has its disadvantages, the basic understanding of saving and investing into capital inputs will be used in the concept of enhancing economic growth among small scale farmers where incomes received from the sales of birds are invested in to the farm by increasing the capital stock (input) of the farm to make work easier and faster to yield an optimum output. The investment or acquisition of capital input may be in the form of an automated feeding and drinking systems, automated belt system for the collection of eggs and the operation of incubator on poultry farms when farmers increase their capacity and operations on their farms. These machines or equipment will make work easier and faster as compared to farming manually. For instance on a farm which has 10000 layers and there are no technological equipment to aid in the

collection of eggs, farmers employ more labour which becomes more costly as compared a poultry farm that has an automated housing and egg collection system which employs less labour but work is done more easier and faster.

As farmers invest in their farms by acquiring technological inputs, work done becomes easier and the process of taking care of the birds becomes easier and efficient. Due to the contract farming, farmers are able to save more since there is always a constant demand for live birds and eggs. Using the Harrod- Domar model to explain how savings and investment helps to increase farm capacity by the acquisition of capital inputs to make work easier, faster and to achieve an optimum yield will encourage farmers to save and invest more since a sure means of wealth creation is established (poultry farm).

4.4 Importance of management and records keeping on poultry farms

Most farmers of today are more business oriented as compared to 20 years ago where farmers farm because it was something they liked to do. In present times, being a talented farmer is not enough to help grow one's farm and increase profitability but also being a good financial manager helps to increase one's success of operating a farm profitably. In order to be a good financial manager, a farmer has to keep records of activities which are undertaken at the farm daily. This helps to track the growth of the farm through accessing and analysing these activities, measuring their impact and concluding if some practices are good or not. Farmers with basic education are to easily understand the basics of bookkeeping since it is not difficult to record daily activities on the farm. Most people think it is appropriate to keep farm records or financial records of their farms in order to make it easy for tax payment and other legal related issues. In actual fact, a history of farm records helps farmers in making proper management decision of the farm, cutting cost, sticking to budgets which at the end helps to increase the profitability and growth of the farm (Hartsfield, 2012).

Records' keeping also helps to record daily routines in rearing birds. When filing is done properly, changes in the health of flocks can be detected on time and proper medication can be administered to the flock as a result of the records kept on the health of the birds. For instance a farmer who takes records of farm activities is able to administer vaccination for the flocks if a similar or same

disease affected the flocks previously as compared to a farmer who does not keep farm records. In a large farm with more than 50000 birds, a farmer who keeps records of the process is able to know the number of birds that have been debeaked and he is also compelled to differentiate between debeaked birds and non-debeaked birds. Rather than memorising farm activities in the head, a farmer who keeps a daily record of activities on the farm can also design a routine which can be used to run the daily operations of the farm. This helps to design a system which helps to run the farm and procedures that must be followed when precautions are to be taken when handling delicate matters on the farm.

Aside managing the birds, record keeping helps farmers to draw budgets on feed rationing, food supplement; vaccination, labour resources and future expansion of farm can be estimated easily. Also workers data collected on farms can help in career development. As the farm expands, workers who want to develop their career can be trained in specific fields of their choice so as to effectively manage the farm. In addition, farm records present detailed information on the finances of the farm for investors. Investors, before investing may want to know the financial position of the farm and to know the growth rate of the farm before investing. Keeping a farm record in times like this makes it to make easier for decisions to be made by both farmers and investors and to an extent farmers may receive advices from experts due to the records that have taken. As compared to farmers who do not take records of farm activities, run a risk of incurring huge operating costs since there are no plans and budgets that are followed in running farm operations. Information for investors is either limited or unavailable making it difficult for farmers to receive investments for the growth of their farms.

In this initiative, records keeping by farmers will be a priority since it will provide more information about the performance and growth of the farm. Records keeping will range from simple to complex system depending on the level of literacy of the farmers. Those with no formal education will be taught how to record daily activities where lessons will be adapted to the local setting of the farmer which will be made easier to understand. Farmers in this category will receive lot of attention from both Bank X and the education center since they do not have much idea on records keeping, planning, budgeting and farm management. Both Bank X and the education center will design a teaching programme for these farmers which will be made simple and easier for them to understand the concept of recording keeping. Farmers in this category will be taught

on recording of simple daily activities and as they understand the concept simple accounting recordings will be included, ensuring that farmers will make informed decision in managing the farm as a result of the knowledge acquired through the recording of activities and the financial statement of the farm.

For farmers with formal education, a standard system for recording daily activities and finances will be designed since some accounting system may be difficult to understand. A simplified balance sheet will be designed for the farmers who will be taught on how to use it. Credit and debit entry on sales and expenses, profit and loss account for recording profits and loss will be simplified for farmers to use in recording the financial transactions of the farm. With farmers who are farming on a large scale with professional qualifications in managing farms, their farm recording systems and financial recording will be overviewed and any difficulties that these farmers have in understanding these complex systems will be explained to them or better still design a system that is not too complex and easy to understand for them to use.

In conclusion, the formalities and procedures that will be designed will help farmers have an idea of how their management style and decision making skills affect the growth of their farm which will help in developing their capabilities and skills to properly manage and enhance the farm's growth.

5. IMPLEMENTATION OF THE CONCEPT OF CONTRACT FARMING AND ENTREPRENEURSHIP

5.1 Incorporating knowledge and entrepreneurship

Contract farming can be used as a means of enhancing economic growth and productivity for both farmers and BF Farm and buyers in general. With a well-documented and agreed rules governing the contract, farmers are assured of a ready market for their products and buyers are assured of a constant supply of quality goods according to the agreed state and condition of goods to be delivered in the contract. After the delivery of the agreed quantity and quality of goods to the buyer, farmers can still increase profit by selling all excess produce to other buyers without breaching the contract. Selling off the excess goods helps to further increase the income level of farmers, and when incomes are managed properly and coupled with good farming and management practices, it increases the farmers capacity (in terms of size and an increase in total production) and at the end helps to increase the creation of wealth for the farmer.

The contract between BF Farm and poultry farmers shall be governed by the laws of Ghana in case of any litigations between BF Farm and the poultry farmers. Terms governing the contract between BF Farm and the farmers will be drafted only if both parties agrees to the terms in order for both parties to understand every clause in the contract and at the end allow transparency in the dealings between the parties. Since most farmers lack formal education, the contract drafting will be done in a way that, there will be legal practitioners who will explain the terms of the contract to the farmers again for them to understand the whole concept of the contract, its importance and its benefits to the parties involved. Before farmers sign the contract, they are prepared to understand the whole project through symposiums, seminars, role plays and other media which will make it easier for them to understand the concept of contract farming and entrepreneurship. Farmers are not be forced to sign the contract even after understanding the concept. Also if they seem to lack understanding on contract farming and entrepreneurship and how it is to achieve economic growth, they are not allowed to sign the contract. The organisers of this initiative; BF Farm, Bank X and the educational center will take farmers over the concept of contract farming and entrepreneurship for them to fully understand the concept before making a choice either to sign up for the programme or not. Only farmers who understand the concept of contract farming and its terms

are allowed to sign a contract with BF Farm. This ensures a smooth flow of transaction, fairness and transparency between the organisers and the farmers.

For farmers to enhance their economic growth, entrepreneurial skills, good decision making and management skills are needed for farmers to grow both in size (capacity) and in wealth. As explained above, contract farming alone may not help farmers to enhance economic growth since reinvestment, decision making and management may not be done properly thereby decreasing the economic capabilities of farmers. In order to enhance farmers' ability in decision making and entrepreneurial skills, farmers will be taken through entrepreneurial and management studies in order for them to understand the subjects and how they can apply what they have learnt to the management of their farms. The education center has designed a system whereby teaching and training of farmers in entrepreneurship, management and farming practices has been simplified and adapted to the local settings of the farmers so as to make it easier for them to understand what is being taught and the benefits of it to their farms. The system is designed in such a way that, it is simple and flexible to make changes to procedures in farming should a farmer prefer another means of doing things. The preferred method chosen by the farmer will be critically studied to find shortfalls which will be addressed in order for the farmer to avoid challenges while working with such procedures. The system also encourages farmers to share information and explain processes and concepts among themselves and also drawing the attention of the organisers in case they are faced with any difficulty. Since the initiative is supposed to benefit all farmers, there will be no favouritism of any farmer who will be helped to grow more than other farmers but the growth of farmers depend mostly on themselves in order for them to enhance their economic growth. The main and important assistance to be received by any farmer will be in the area of entrepreneurship, management and modern farming practices.

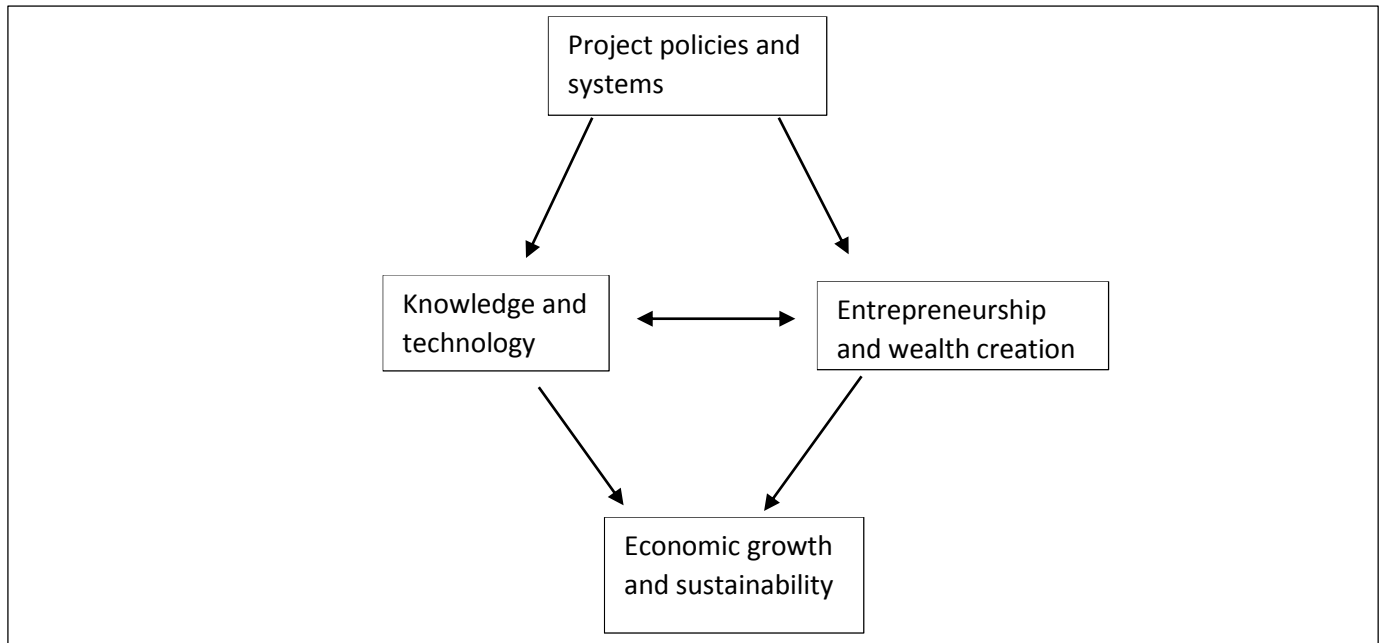


Figure 4: incorporation of knowledge and entrepreneurship in achieving economic growth and sustainability

Figure 5 shows how economic growth can be achieved through the incorporation of knowledge and technology and entrepreneurship and wealth creation. Without each element, it will be difficult to enhance growth since the two concepts have proved to be positively related. Without information or knowledge and technology, poultry farming will be difficult to practice since, modern practices that should be practiced are not known to farmers especially those related to technology. For example, automated feeding and drinking systems, automated belt system for the collection of eggs and the operation of incubators and other equipment that makes work easier and faster may not be known to farmers and how they are been operated. Also with knowledge, farmers may not have in-depth knowledge or information on appropriate waste handling and how not to contaminate the environment with poultry byproducts which results in disease outbreaks. This also includes farmers operating processing plant and they get rid of their waste. The operation of a slaughter house by a farmer also requires him to pay great attention to packaging and refrigeration and hygiene and sanitization on the farm. Packaging and refrigeration is important because, if not done properly exposes the meat to harmful diseases such as Salmonella. In waste management, farmers can sell off droppings to farmers or to processing companies which also adds up to their revenues in the long run.

Farmers may have entrepreneurial skills but without knowledge and technology, they may resort to farming manually which is costly since the farmer will require workers depending on the size of the farm. Also with lack of information and knowledge, farmers may not know the appropriate way for caring for the flock, medications to administer on the flock should there be an outbreak of diseases and even how feed is to be rationed for the birds. Adequate knowledge and information is needed to properly raise healthy birds in order to make profit since no buyer will purchase sick and unhealthy birds. With an appropriately developed HACCP plan, farmers will be informed more on how to feed, vaccinate, house, clean and sanitize both the flocks and the farm as a whole, and as a result of the incorporation of the HACCP plan, effective and efficient modern farm practice are carefully followed which results in raising healthy birds, thereby minimizing or preventing the degree of exposure of both birds and meat to contaminations or diseases and increasing the sales of healthy birds thereby increasing farmers' revenue at the long run.

Furthermore, the absence of entrepreneurial skills and management will make it difficult for farmers to create wealth on a large scale. Lack of management, entrepreneurship and a good decision making skills limits the ability of farmers to increase their capacity and their profits. Reason being that, funds that come in either as profits and investments may not be managed well and may be allocated to areas where they are mostly not needed. Also, small scale farmers with the aim of practicing subsistent farming may not deem it important to increase their farm capacity to increase their wealth but a means of increasing their standard of living which limits the farm's capacity to be increased and in the long run affects their wealth creation capabilities rendering them to farm on a small scale or backyard farming.

With this initiative (concept of contract farming and entrepreneurship to enhance economic growth), policies, systems, guidelines and processes will be provided for farmers who will be working with BF Farms in order to achieve a common goal of enhancing economic growth. Also processes to be followed before contracts will be signed and a process for existing or terminating contracts will be included in the policies. Also, the policies and systems of the project (concept of contract farming and entrepreneurship to enhance economic growth) consist of a specific information about entrepreneurship, knowledge management and information sharing and technology and how they are to be taught and incorporated in farm activities under the supervision of local implementers who will teach the farmers. In a nutshell the policies and systems provides infrastructure for enterprise development and the empowerment of farmers to learn new ways of

farming, managing and sustaining economic growth through contract farming and increasing their abilities both to learn newer farming methods and managing their farms which in the long run increases their wealth creating abilities. At this initial stage, the only concern for the organizers of this project is that, farmers will avail themselves to be taught the proper way of farming through the use of the HACCP as a guidance for their farming activities which will result to raising of healthy birds and increasing their revenue at the end.

5.2 A model for training small scale farmers in poultry farming

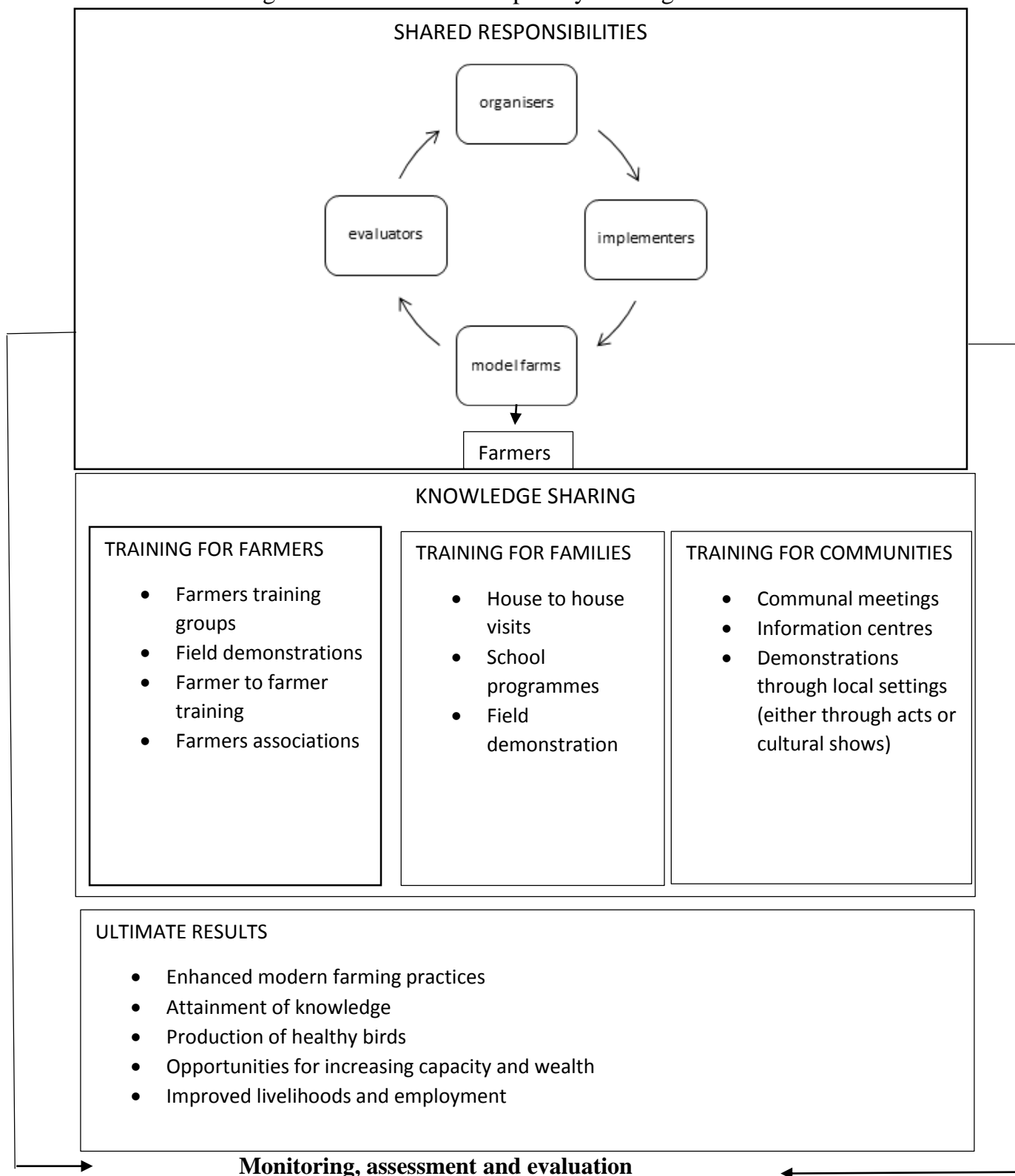


Figure 5: training model for small scale poultry farmers as according to ("https://Croplife.Org/Wp-Content/Uploads/Pdf_Files/Adoni-Booklet.Pdf")

Figure 6 is a model which shows how farmers will be trained in entrepreneurship, contract farming and also demonstration of poultry farming practices. The first table explains how policies, strategies and practices governing the project of enhancing economic growth among small scale poultry farmers. In the chart, the project organizers consist of Bank X, BF Farm and the education center. The project organizers provides resources, expertise and experience for developing the training program and its implementation. They further give guidelines for how training programmes should be designed to suite farmers and to make it easier for them to learn.

The project implementers are those who design training programmes to meet the local settings of the farmers. That is, they adapt the training programmes to the local conditions of farmers. Depending on the location and language of farmers, the project implementers are to design training programmes in these languages and to further adjust training contents and demonstrations to the local culture and norms of the farmer. This simplifies the learning and training process for both the farmers and the implementers since the farmer is able to really understand what is being taught in his own language and culture.

Before farmers will be taught anything from the training programmes, training programmes are firstly tried on selected farms known as the model farms. This is done to access and evaluate the outcomes of the training programmes before farmers are trained. The model farm also helps to further redesign and develop training programs after test carried shows gaps in the training programmes and processes. After corrections and developments, tests are carried out to evaluate new processes that were added to the training program to access their outcomes and to find if gaps still exist. If there are no gaps, then the training program is ready to be implemented on farms.

In its implementation on farms, evaluators examine the training process to access the simplicity of training programmes being taught and the ability of farmers to comprehend what is being taught. In assessing, evaluators monitor and measure the degree of effectiveness and accuracy of the training programs on farms to find any shortcomings. In case some shortcomings are found, especially with the training programmes, evaluators will have to check if these shortcomings arise as a result of some policies and strategies that were used in designing the training programmes. If the policies and strategies are the cause of a shortcomings, the evaluators will make a report on the shortcoming and how the strategies implemented are hindering the success of the program. Further, the evaluator will suggest possible solutions to these shortcomings and send it to the project organizers for reevaluations and amendments of policies.

The second table in *figure 6* shows the strategies that will be used in teaching farmers in different areas, population and settings. There are different procedures for training families, associational farmers and communal farmers since one process maybe not be appropriate to be used in training all the farmers in the different categories. For farmers training; thus, large scale, professionals and associational farmers, there are master trainers who will train farmers through field demonstration, group trainings; where a maximum number of five (5) farmers will be in a group and will be taught on the procedures of farming. This will encourage farmer-to-farmer learning, where farmers will help demonstrate practical and theoretical concept to each other and make it easier for themselves to understand since they will know how these concepts will apply on their farms and the benefits it comes with. Training associational farmers will entail the same process for training farmers in but will include more symposiums, and demonstrations on field will start from the seminars and then later to the fields. Since most poultry farmers in Ghana find themselves in unions, this approach will help farmers to also benefit from the union. Union that have not sign up to join the poultry project may have to pay some fees to the training supervisors for the seminars to be held. For family training, training supervisors will visit the poultry farm of the family, train them on the modern poultry farming practices and later demonstrate these practices to them on the farms. For families who are concentrated in an area, there will be a form of school style setting programmes where families will be gathered and taught and hands-on demonstrations will be done for families to understand what is being taught. School programmes will be done in such a way that farmers will learn the theoretical aspect of modern poultry farming practices in their gatherings and the demonstration or the practical aspect of the practices will be undertaken on the field with each farmer having his/her supervisor. Studies will take place twice a week with much supervision and assistance provided for these farmers in case of difficulties to understand the modern farming practices. This arises due to the fact that most farmers found in this category are subsistent farmers with low level of formal education and poultry farming is practiced using the primitive way of farming. Training program for farmers in this category will vary since each farmer may have his/her own supervisor where training programmes will be customize to the farmer's ability to understand.

Communal training of poultry farmers will be done in districts where there is a high concentration of poultry farmers in a locality. With such groups, it is easier for supervisors to organize communal training since all farmers will gather and participate in training programs and the opportunity to

ask questions during these sessions. For demonstrations on farming practices, there will be group based demonstrations whereby farmers will be divided into groups and demonstrations will be done on the field for the farmers to understand. During the demonstrations, supervisors will ask various questions and pointing farmers randomly to answer these questions. The activity is to ensure that farmers understand what they are being taught. Farmers during these training sessions are encourage ask any question or share any problem or misunderstanding relating to poultry farming. When farmers share their problems, supervisors are able to explain to them why their problems exist and provide possible solutions that will help solve their problems by using the Hazard analysis Critical Control Points. Other way for demonstrating farming practices is through cultural shows, where most farmers understand is being communicated since the medium used for communication is easily understood by the farmers since the cultural show tends to be part of their life. Also in localities where there are large number of poultry farmers, the organizers of the project intend to build information centers where resource personnel will be available at these centers to provide information and assistance to these farmers when the need arises, making it easier for farmers to access lot of information, and helps to make them understand and practice the modern way of poultry farming.

The last table in the diagram shows the benefit that partakers of the project enjoys. Even though it will take time for the project to fully be established, everyone included in the project benefits at the end. The investors of the project which includes Bank X, BF Farm and the education center (implementers, evaluators and supervisors) and farmers in the project all benefit. For farmers especially, they attain new information and knowledge regarding poultry farming practices, they are able to rear healthy birds through the use and implementation of modern farming practices. Aside these, farmers are able to increase their farm capacities and increase their wealth creation through entrepreneurship and contract farming which at the end improves farmers' livelihood. For Bank X, BF Farm and the education center, they benefit from the numerous processing plants they build and the sales of frozen meat to the Ghanaian market and exports they undertake.

5.3 An excerpt from the handbook of prerequisite guidelines for poultry farming

As discussed in Chapter 3, avian influenza has been one of the major problems facing poultry farming in Ghana. In preventing or minimizing its outbreak and exposure to birds, farmers who have signed up with the project must follow the guidelines below in order to prevent or minimize the exposure of viruses and other infections to birds and humans. This guidelines are an excerpt from the HACCP requirements of the thesis project that poultry farmers working with the project organizers must follow to ensure a healthy production of birds.

Mandatory Requirements for Farmers

- Facilities:

The construction of poultry house should be located where there is enough light and air for the birds. Facilities should not be built in areas where predators can easily have access to the birds and cause harm to them. Since most poultry house in Ghana is built out of wire and wood, the building standard under the project is that:

In using wire gauze for construction, either valve train shrapnel screens, doubled chicken wire or doubled crimp screen should be used in insulating or lining the structure before fencing it with a galvanized plaster welded wire mesh.

- ✓ HACCP Objective: it helps to prevent or minimize the exposure of birds to predators such as rodents and snakes creeping into the structure, small creatures and other birds (especially waterfowls) that may be carriers of any virus that will affect the health it goes further to allow birds to have the natural feel (semi-intensive system) where they enjoy both light and air but their movement is restricted. In terms of restriction, they are not allowed to go out of the poultry house but enough space is provided for birds to move freely.

- Cleaning and sanitation:

The cleanliness of a poultry farm also contributes to the safety of its flocks. A farm which does not have a sanitation program or procedures is likely to have a high number of birds affected by viruses and bacteria which, at the long run causes financial difficulties to the farmer. In order to avoid this, farmers are to strictly follow to the sanitation plan that have been designed and documented by the organizers for farmers use. In addition, farmers can further add their own routine to the sanitation plan provided for them. Sanitation plan is

designed for farmers both in writing and imagery format for farmers who cannot read. They only have to follow the descriptive images provided; which will be explained to them, in order to understand the plan. The sanitation plan covers all cleaning processes from personal hygiene, poultry house disinfection, tools and accessories used and chemical control in cleaning. In ensuring a clean farm:

- Farmers need to provide protective garments on the farm such as boots, gloves, nose masks and attires that will protect both the birds and the farmer.
- At every vintage point on the farm, there should be clean water, towel, disinfectants, soaps and gloves where farmers can wash their hands to avoid any possible spread of viruses and bacteria.
- With cleaning or disinfecting the poultry house, there are guidelines governing the use of chemicals. There are specific measurements on the use of fumigants and disinfectants which will not leave residues that will affect birds.
 - ✓ HACCP Objective: by following the guidelines on cleaning, the percentage of birds becoming infected with salmonella and other bacteria is controlled and minimized. Feeders and drinkers which are cleaned regularly on a scheduled time helps to protect the flock since the surfaces of these equipment are clean. Also since the cleaning program is very intensive, it covers the floor cleaning, broiler house, crates for transporting chickens and other equipment used for farming. Lastly, the transfer of any disease from man-to-bird or from bird-to-man is prevented when the plan or guideline is used.
- Training:

All farmers and workers on poultry farms are obliged to receive intense training on poultry farming the handling of birds, cleaning and sanitation, personal hygiene, pest and disease control and the importance of incorporating HACCP guidelines into poultry activities. This helps to give farmers in depth knowledge of their daily operations and measurements to take when there are casualties on the farm. Training on modern farming and practices and HACCP prepares farmers well in managing the activities on the farm that will yield to the production of healthy birds. As discussed in the previous point, farmers are trained on the use of chemical; not only for the purpose of cleaning but also chemicals that can be used for keeping birds safe and healthy from parasites.

With these procedures put in place, farmers are assured of producing healthy birds, increasing their yield, increasing sales which at the long run increases their revenue and also helps them to expand their farm. By following these guideline, diseases and pest attacks are controlled and the effect, which is the loss of birds is limited hence a massive change in farmers finances which in the effect becomes an economic security for farmers to continue the poultry practices since they will be rewarded for their effort at the long run.

6. CONCLUSION

Economic growth among small scale poultry farmers can be enhanced through contract farming and entrepreneurship when farmers raise healthy birds by the incorporation of a well-developed HACCP plan on their farming activities which provides them with more than enough information on the rearing of birds. This information includes cleaning and sanitation of both the poultry farm, equipment and the environment at large, feed rationing and feed supplements for birds, waste handling and management, packaging and refrigeration, vaccinations, among others are some of the guidelines and information provided by the HACCP plan. In addition the use of technological equipment makes work easier and faster for farmers, cutting down operating cost and increasing farmers' revenue.

As a result of raising healthy birds, the sales margin of the farmer increases as a result of an agreed contract of supplying healthy birds to processing companies or buyers. With farmers being trained on managerial and entrepreneurial skills, they are able to make informed decision on how best to influence growth on their farms. Decisions on investments made through the Harrod-Domar model where farmers save an amount to acquire technological equipment to make the process of rearing birds more efficient and effective, creating budgets, records and bookkeeping, are made easily as a result of the training farmers received from the educational center and the desire to enhance and maintain economic growth compels them to make better decisions that will enhance their finances. As a result of farm demonstrations and visits, guidelines and descriptive processes drafted to guide farmers in learning on entrepreneurship, management, modern farm practices and the incorporation of HACCP on their farms, healthy birds are raised and the rate by which birds are exposed to dangers are drastically minimized, controlled or prevented.

In conclusion, a constant supply and demand of healthy chickens increases farmers' revenue. And the act of making good managerial decisions in investing, acquisition of capital inputs and keeping accurate information on the day-to-day activities on the farm helps farmers to increase their total output (healthy birds) thereby enhancing their economic growth as a result of a constant sales of their birds. Without good farming practices, good managerial decisions, records and bookkeeping, investment into capital inputs and the incorporation of hazard analysis and critical control points (HACCP) in farming activities it will be difficult to enhance economic growth.

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